




# Héber H. Arcolezi, Ph.D.

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## Professional Experience













- Oct 2023 – . . . . .  **Tenured Research Scientist (ISFP)**<sup>1</sup>, Inria Grenoble, France.  
Feb 2022 – Sept 2023  **Postdoctoral Researcher**, Inria Saclay & École Polytechnique, France.

## Education

- Jun 2019 – Jan 2022  **Ph.D. in Computer Science**, Université Bourgogne Franche-Comté (UBFC).  
**Thesis title:** *Production of Categorical Data Verifying Differential Privacy: Conception and Applications to Machine Learning* [link].  
**Advisors:** Jean-François Couchot, Bechara Al Bouna, and Xiaokui Xiao.  
Sep 2017 – Aug 2019  **M.Sc. in Electrical Engineering**, São Paulo State University (UNESP).  
**Thesis title:** *A Novel Robust and Intelligent Control Based Approach for Human Lower Limb Rehabilitation via Neuromuscular Electrical Stimulation* [link].  
**Advisor:** Aparecido A. de Carvalho.  
Aug 2012 – Jul 2017  **B.Eng. in Electrical Engineering**, Mato Grosso State University (UNEMAT).  
**Thesis title:** *Um Estudo Complementar ao Projeto de Controle PID no Caso do Pêndulo Invertido (in Portuguese)* [link].  
**Advisor:** Rogério B. Quirino.

## Publications

### Journal Articles


-  **H. H. Arcolezi** and S. Gambs, “Revealing the true cost of locally differentially private protocols: An auditing perspective,” *Proceedings on Privacy Enhancing Technologies*, vol. 2024, no. 4, pp. 123–141, 2024.  
 DOI: 10.56553/popets-2024-0110.
-  K. Makhoul, **H. H. Arcolezi**, S. Zhioua, G. B. Brahim, and C. Palamidessi, “On the impact of multi-dimensional local differential privacy on fairness,” *Data Mining and Knowledge Discovery*, May 2024, ISSN: 1573-756X.  DOI: 10.1007/s10618-024-01031-0.
-  **H. H. Arcolezi**, S. Gambs, J.-F. Couchot, and C. Palamidessi, “On the risks of collecting multidimensional data under local differential privacy,” *Proc. VLDB Endow.*, vol. 16, no. 5, pp. 1126–1139, Jan. 2023, ISSN: 2150-8097.  DOI: 10.14778/3579075.3579086.
-  **H. H. Arcolezi**, S. Cerna, J.-F. Couchot, C. Guyeux, and A. Makhoul, “Privacy-preserving prediction of victim’s mortality and their need for transportation to health facilities,” *IEEE Transactions on Industrial Informatics*, vol. 18, no. 8, pp. 5592–5599, 2022.  DOI: 10.1109/TII.2021.3123588.
-  **H. H. Arcolezi**, J.-F. Couchot, B. A. Bouna, and X. Xiao, “Improving the utility of locally differentially private protocols for longitudinal and multidimensional frequency estimates,” *Digital Communications and Networks*, Jul. 2022.  DOI: 10.1016/j.dcan.2022.07.003.
-  **H. H. Arcolezi**, J.-F. Couchot, D. Renaud, B. Al Bouna, and X. Xiao, “Differentially private multivariate time series forecasting of aggregated human mobility with deep learning: Input or gradient perturbation?” *Neural Computing and Applications*, vol. 34, no. 16, pp. 13 355–13 369, Jun. 2022, ISSN: 1433-3058.  DOI: 10.1007/s00521-022-07393-0.






<sup>1</sup>Inria ISFP researchers have a light teaching load, ranging from approximately 32 to 64 hours per year. More information at <https://www.inria.fr/fr/inria-starting-faculty-position-isfp>.

- 7 **H. H. Arcolezi**, S. Cerna, C. Guyeux, and J.-F. Couchot, “Preserving geo-indistinguishability of the emergency scene to predict ambulance response time,” *Mathematical and Computational Applications*, vol. 26, no. 3, p. 56, Aug. 2021, ISSN: 2297-8747. [DOI: 10.3390/mca26030056](https://doi.org/10.3390/mca26030056).
- 8 **H. H. Arcolezi**, W. R. Nunes, R. A. de Araujo, *et al.*, “Rise controller tuning and system identification through machine learning for human lower limb rehabilitation via neuromuscular electrical stimulation,” *Engineering Applications of Artificial Intelligence*, vol. 102, p. 104 294, Jun. 2021, ISSN: 0952-1976. [DOI: 10.1016/j.engappai.2021.104294](https://doi.org/10.1016/j.engappai.2021.104294).
- 9 S. Cerna, **H. H. Arcolezi**, C. Guyeux, G. Royer-Fey, and C. Chevallier, “Machine learning-based forecasting of firemen ambulances’ turnaround time in hospitals, considering the covid-19 impact,” *Applied Soft Computing*, vol. 109, p. 107 561, Sep. 2021, ISSN: 1568-4946. [DOI: 10.1016/j.asoc.2021.107561](https://doi.org/10.1016/j.asoc.2021.107561).
- 10 **H. H. Arcolezi**, J.-F. Couchot, S. Cerna, *et al.*, “Forecasting the number of firefighter interventions per region with local-differential-privacy-based data,” *Computers & Security*, vol. 96, p. 101 888, Sep. 2020, ISSN: 0167-4048. [DOI: 10.1016/j.cose.2020.101888](https://doi.org/10.1016/j.cose.2020.101888).
- 11 **H. H. Arcolezi**, W. R. B. M. Nunes, S. Cerna, *et al.*, “Identifying the knee joint angular position under neuromuscular electrical stimulation via long short-term memory neural networks,” *Research on Biomedical Engineering*, vol. 36, no. 4, pp. 511–526, Sep. 2020, ISSN: 2446-4740. [DOI: 10.1007/s42600-020-00089-1](https://doi.org/10.1007/s42600-020-00089-1).





## Conference Proceedings

- 1 R. Binkyte, C. A. Pinzón, S. Lestyán, K. Jung, **H. H. Arcolezi**, and C. Palamidessi, “Causal discovery under local privacy,” in *Proceedings of the Third Conference on Causal Learning and Reasoning*, F. Locatello and V. Didelez, Eds., ser. Proceedings of Machine Learning Research, vol. 236, PMLR, Jan. 2024, pp. 325–383. [URL: https://proceedings.mlr.press/v236/binkyte24a.html](https://proceedings.mlr.press/v236/binkyte24a.html).
- 2 K. Makhlof, T. Stefanović, **H. H. Arcolezi**, and C. Palamidessi, “A systematic and formal study of the impact of local differential privacy on fairness: Preliminary results,” in *2024 IEEE 37th Computer Security Foundations Symposium (CSF)*, 2024, pp. 1–16. [DOI: 10.1109/CSF61375.2024.00039](https://doi.org/10.1109/CSF61375.2024.00039).
- 3 **H. H. Arcolezi**, S. Cerna, and C. Palamidessi, “On the utility gain of iterative bayesian update for locally differentially private mechanisms,” in *Data and Applications Security and Privacy XXXVII*, Springer Nature Switzerland, 2023, pp. 165–183, ISBN: 9783031375866. [DOI: 10.1007/978-3-031-37586-6\\_11](https://doi.org/10.1007/978-3-031-37586-6_11).
- 4 **H. H. Arcolezi**, K. Makhlof, and C. Palamidessi, “(local) differential privacy has no disparate impact on fairness,” in *Data and Applications Security and Privacy XXXVII*, V. Atluri and A. L. Ferrara, Eds., Cham: Springer Nature Switzerland, 2023, pp. 3–21. [DOI: 10.1007/978-3-031-37586-6\\_1](https://doi.org/10.1007/978-3-031-37586-6_1).
- 5 **H. H. Arcolezi**, C. A. Pinzón, C. Palamidessi, and S. Gambs, “Frequency estimation of evolving data under local differential privacy,” in *Proceedings of the 26th International Conference on Extending Database Technology, EDBT 2023, Ioannina, Greece, March 28 - March 31, 2023*, OpenProceedings.org, 2023, pp. 512–525. [DOI: 10.48786/EDBT.2023.44](https://doi.org/10.48786/EDBT.2023.44).
- 6 **H. H. Arcolezi**, J.-F. Couchot, S. Gambs, C. Palamidessi, and M. Zolfaghari, “Multi-freq-ldpy: Multiple frequency estimation under local differential privacy in python,” in *Computer Security – ESORICS 2022*, V. Atluri, R. Di Pietro, C. D. Jensen, and W. Meng, Eds., Cham: Springer Nature Switzerland, 2022, pp. 770–775. [DOI: 10.1007/978-3-031-17143-7\\_40](https://doi.org/10.1007/978-3-031-17143-7_40).
- 7 **H. H. Arcolezi**, J.-F. Couchot, B. Al Bouna, and X. Xiao, “Random sampling plus fake data: Multidimensional frequency estimates with local differential privacy,” in *Proceedings of the 30th ACM International Conference on Information & Knowledge Management*, ACM, Oct. 2021, pp. 47–57. [DOI: 10.1145/3459637.3482467](https://doi.org/10.1145/3459637.3482467).
- 8 **H. H. Arcolezi**, J.-F. Couchot, B. A. Bouna, and X. Xiao, “Longitudinal collection and analysis of mobile phone data with local differential privacy,” in *IFIP International Summer School on Privacy and Identity*

*Management*, Springer International Publishing, 2021, pp. 40–57, ISBN: 9783030724658.  DOI: 10.1007/978-3-030-72465-8\_3.

- 9 **H. H. Arcolezi**, J.-F. Couchot, O. Baala, J.-M. Contet, B. Al Bouna, and X. Xiao, “Mobility modeling through mobile data: Generating an optimized and open dataset respecting privacy,” in *2020 International Wireless Communications and Mobile Computing (IWCMC)*, 2020, pp. 1689–1694.  DOI: 10.1109/IWCMC48107.2020.9148138.
- 10 S. Cerna, C. Guyeux, **H. H. Arcolezi**, R. Couturier, and G. Royer, “A comparison of lstm and xgboost for predicting firemen interventions,” in *Trends and Innovations in Information Systems and Technologies*, Springer International Publishing, 2020, pp. 424–434, ISBN: 9783030456917.  DOI: 10.1007/978-3-030-45691-7\_39.
- 11 S. Cerna, C. Guyeux, **H. H. Arcolezi**, and G. Royer, “Boosting methods for predicting firemen interventions,” in *2020 11th International Conference on Information and Communication Systems (ICICS)*, 2020, pp. 001–006.  DOI: 10.1109/ICICS49469.2020.239488.
- 12 **H. H. Arcolezi**, W. R. B. M. Nunes, S. L. C. Ñahuis, M. A. A. Sanches, M. C. M. Teixeira, and A. A. de Carvalho, “A rise-based controller fine-tuned by an improved genetic algorithm for human lower limb rehabilitation via neuromuscular electrical stimulation,” in *2019 6th International Conference on Control, Decision and Information Technologies (CoDIT)*, 2019, pp. 1197–1202.  DOI: 10.1109/CoDIT.2019.8820357.
- 13 S. L. C. Ñahuis, C. Guyeux, **H. H. Arcolezi**, R. Couturier, G. Royer, and A. D. P. Lotufo, “Long short-term memory for predicting firemen interventions,” in *2019 6th International Conference on Control, Decision and Information Technologies (CoDIT)*, 2019, pp. 1132–1137.  DOI: 10.1109/CoDIT.2019.8820671.

## Grants

- 2024 – 2028  **ANR AAPG 2024<sup>2</sup> – JCJC (Young Researcher): 347,310€.**  
**Title:** *Aligning Privacy, Utility, and Fairness for Responsible AI (AI-PULSE).*  
**Role:** Principal and Unique Investigator.
- 2024 – 2026  **Inria Associated Team<sup>3</sup>: 32,000€.**  
**Title:** *Algorithmic Auditing of Privacy and Fairness* (<https://team.inria.fr/auditpair/>).  
**Institutions:** Inria (Privatics team), UQAM, and ÉTS Montréal.  
**Role:** Principal Investigator at Inria Side. Profs. Sébastien Gambs and Ulrich Aïvodji are the Principal Investigators at UQAM and ÉTS Montréal, respectively.
- 2023 – 2027  **ANR AAPG 2023 – PRCE (Academic and Industry Collaboration): 338,000€.**  
**Title:** *Making PostgreSQL Differentially Private for Transparent AI (DIFPRIPOS).*  
**Role:** Co-Principal Investigator (Funding share: 15,000€).
- 2023 – 2024  **MIAI Open call to sustain the development and promotion of AI<sup>4</sup>: 10,000€.**  
**Title:** *Exploring the Interplay of Differential Privacy and Fairness in ML.*  
**Role:** Principal and Unique Investigator.

## Awards

- 2024  **Best Reviewer Award** at PETS 2024.




<sup>2</sup>Appel à Projets Générique de l'Agence Nationale de la Recherche (ANR). This is the French equivalent of the NSF CAREER award.

<sup>3</sup>This program funds mobility between Inria and an international research group for 3 years. More info at <https://www.inria.fr/sites/default/files/2023-07/Appel-Equipes-Associees-2024-2.pdf>.

<sup>4</sup><https://miai.univ-grenoble-alpes.fr/research/projects-for-the-development-and-promotion-of-ai/>






## Awards (continued)

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- 2023  **Best Paper Award** at DBSec 2023 for the paper “(Local) differential privacy has no disparate impact on fairness”.
- 2021  **Ph.D. Student Mobility Grant (2,300€)** from the University Bourgogne Franche-Comté (UBFC) to visit the Université du Québec à Montréal (UQAM).
- 2013  **UNEMAT Scholarship (19,200RS – 400RS/month)** to be a collaborator in the Formation of Cooperative Cells (FOCCO) program for 4 years (2013 – 2016).

## Teaching

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- Spring 2024  **Database Management Systems.**  
Professional Bachelor in Networks and Telecommunication, 27h, Université Grenoble Alpes.
- Spring 2023  **Introduction to Computer Science with Java.**  
Engineer degree and Bachelor, 40h, École Polytechnique.
- Spring 2022  **Introduction to Computer Science with Java.**  
Engineer degree and Bachelor, 40h, École Polytechnique.
- Spring 2021  **Privacy for IoT.**  
Master IoT, 20h, Université Bourgogne Franche-Comté.
- Winter 2020  **Privacy for IoT.**  
Master IoT, 20h, Université Bourgogne Franche-Comté.

## Students





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- May 2022 – Oct 2024  **Karima Makhlof**, Inria Saclay & École Polytechnique, France.  
**Type:** Ph.D. Student.  
**Co-Supervisor:** Catuscia Palamidessi.  
**Thesis Title\*:** *Advancing Ethical and Responsible AI: Exploring Fairness, Privacy, and Explainability through Causal Perspectives.*  
**\*Thesis Defended in October 2024.**
- Apr 2023 – Jun 2023  **Tamara Stefanovic**, Inria Saclay & École Polytechnique, France.  
**Type:** Visiting Ph.D. Student.  
**Co-Supervisor:** Catuscia Palamidessi.  
**Internship Project:** *Sympsom’s Paradox Under Obfuscated Data.*
- Feb 2022 – Dec 2022  **Majid Zolfaghari**, Inria Saclay & École Polytechnique, France.  
**Type:** Visiting Ph.D. Student.  
**Co-Supervisor:** Catuscia Palamidessi.  
**Internship Project:** *Personalized Local Differential Privacy in Continual Reports.*

## Services

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### Program Committee

- 2025  CCS, PETS, USENIX Security, ICLR.
- 2024  CCS, PETS, IJCAI, FAccT, SAC, ICLR.
- 2023  NeurIPS, FAccT, ECML PKDD, PPAI, CCS, ICLR.
- 2022  ECML PKDD.

## Services (continued)






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### Conference & Workshop Organization

- 2024  14th Atelier sur la Protection de la Vie Privée<sup>5</sup> (APVP 2024), France.
- 2023  13th Atelier sur la Protection de la Vie Privée (APVP 2023), France.
- 2022  1st Comète Workshop on Ethical AI<sup>6</sup>, France.
- 2017  II Semana da Animação, Modelagem e Automação, Brazil.
- 2014  I Semana da Faculdade de Ciências Exatas, Brazil.





### Talks

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- 2024  **Invited Tutorial:** “Securing Data with Local Differential Privacy: Concepts, Protocols, and Practical Applications” at Selected Areas in Cryptography Summer School 2024.
- 2023  **Invited Talk:** “Locally differentially private protocols for frequency estimation of longitudinal data” at Groupe de travail Protection de la Vie Privée (GT-PVP).
- 2022  **Invited Tutorial:** “A Brief Introduction to Local Differential Privacy” at SYSTOPIA Lab.  
 **Invited Talk:** “Data anonymization and Artificial Intelligence Models (in Portuguese)” at Hospital Risoleta Tolentino Neves (HRTN).
- 2021  **Invited Talk:** “Improving Utility and Privacy in Multidimensional Frequency Estimates Under Local Differential Privacy” at Université du Québec à Montréal (LATECE Seminar).

### Skills

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- Languages  Strong reading, writing and speaking for English, French, Spanish, and Portuguese.
- Coding  Python, Java, Matlab & Simulink, Visual Basic,  $\LaTeX$ .
- Databases  MySQL, PostgreSQL.
- Misc.  Academic research, teaching, supervising, consultation, and publishing.

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<sup>5</sup>Translates to “Workshop on Privacy”. This is the national French workshop from the privacy-preserving community GT-PVP.

<sup>6</sup><https://www.lix.polytechnique.fr/ethicalai/previous/2022/>